



Local Government Association

the implementation of electronic voting in the UK

research summary



The Electoral Commission



This is a summary of research jointly commissioned by the DTLR, Office of the e-Envoy, Electoral Commission, LGA, IDeA and Solace and undertaken by a research team led by De Montfort University

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The e-voting vision

The arcane and incremental nature of UK electoral law – and indeed, electoral practice – means that voting procedures have changed very little in over 100 years. Voting procedures are more or less the same as they were before the advent of universal suffrage, yet virtually every other part of daily lives has changed out of all recognition. The practice of voting in public elections, the most fundamental component of our democracy, has not kept pace with social and economic change.

The expansion of new information and communication technologies into every sphere of people's lives offers the opportunity to progressively overhaul electoral processes and to realise the benefits that new technologies can offer this component of democracy. Most people routinely undertake electronic transactions as part of their every day activities. Millions of people regularly cast electronic votes in private elections, particularly for television and radio contests. Soon, voting in public elections (both local and General Elections) may be one other activity which can be achieved electronically.

The vision of e-voting is not one of a sudden switch over to a single technology. Rather, the vision is one of a phased move to multi-channel elections in which voters are offered a range of means by which to cast their vote and choose the mechanism that most suits them. Some of 2002 local election pilots are already experimenting with this multi-channel approach and the process of piloting, testing and then introducing new approaches will become an increasing feature of electoral practice.

Britain's first e-enabled General Election

By the General Election after next – possibly as soon as 2008, certainly by 2011 – much of the ground should have been prepared for an e-enabled election, offering those who want it the opportunity to vote electronically. The possibilities include:

- some may opt to use the fixed line telephone from their homes to cast their vote (93 per cent of UK homes now have fixed line phones and a further six per cent have mobile phones instead);
- some may use their mobile phones to cast a ballot from any location that they feel like (73 per cent of UK adults now have a mobile phone);
- people working away from home or on holidays abroad may use the internet to cast a ballot from anywhere in the world (currently 53 per cent of UK adults have used the internet);
- those with access to digital TV (currently 8.3 million subscribers) may use the interactive capacity that many digital TVs incorporate to cast a vote;
- some may find the current system of postal voting on demand, (1.4 million voters chose to cast a postal ballot in the 2001 General Election – the first time that postal voting was made available to any one who wanted to vote this way), as the most appropriate means of voting; and

- many will still prefer the traditional activity of attending a polling station and casting their vote in person. Even here, however, the traditional paper and pencil may be replaced by an electronic machine that records their vote. Furthermore, it will be possible to vote from any polling station, not only the one nearest to home.

Other features around the election may also change:

- instead of polling card, voters might receive PIN numbers or other forms of electronic authentication for use in e-voting;
- remote voting by electronic means (RVEM - e-voting from places other than a supervised polling station) may be allowed over a number of days, rather than simply on polling day; and
- once a significant proportion of votes are cast electronically, the count and declaration of results may be much quicker, especially in those places that have traditionally suffered from lengthy transportation times for ballot boxes at the close of poll.

Britain's first e-enabled General Election will look very different from contemporary electoral practice. As technology evolves and people's experience and confidence in using it develops, so the routes through which voting takes place may evolve as well. Laying the foundations for an e-enabled General Election will also create electoral processes that are efficient, robust and flexible and which can be adapted more readily to other electoral reforms and, indeed, for other voting purposes, such as referendums.

From vision to reality

Achieving this vision will not be easy. Preparing the ground for the first e-enabled election will need to tackle a range of complex problems. The purpose of the research was to:

- understand the context within which electronic voting can be successfully introduced, including the barriers and issues that need to be addressed; and
- prepare the ground for implementation and propose ways in which electronic voting could be introduced for parliamentary and local government elections.

Consequently, the research activities included:

- a desk based review of UK and overseas experience;
- an analysis of the full range of technological options;
- a study of public attitudes and opinion towards e-voting;
- a study of the perceptions of different stakeholders;
- an analysis of the legal framework; and
- a study of local government capacity (focusing especially upon the 2002 electoral pilots).

The full research report and the accompanying technical papers consider a wide range of research evidence and take a holistic view of the issues surrounding the implementation of e-voting.

Preparing the ground - principal recommendations

Implementation will involve a number of complementary activities, some of which are already underway, others of which will need initiation. An implementation strategy will need to carefully co-ordinate these activities to ensure that the full potential of e-voting can be realised.

- 1 Protecting the fundamental features of our democracy should lie at the heart of implementation. There should not be large scale national implementation of RVEM until the issues of secrecy, security, technological penetration and voter capacity have been adequately addressed.
- 2 Implementation of e-voting, especially through remote methods, should be based upon the principles of flexibility and choice, ensuring that voters are not restricted to one preferred method but can choose the method of voting that most suits their lifestyle and preferences. It is likely, therefore, that implementation of multiple methods of e-voting will include some combination of polling station voting by electronic means, as well as remote connections through the internet, digital TV and other suitable technologies. Important to this element of choice is that it should include, for the foreseeable future, the option of voting within polling stations.
- 3 Piloting of different technologies and processes should continue to lie at the heart of the implementation strategy. A 'big-bang' approach to implementation is not desirable - it introduces inherent technical challenges and risks and the public wants to retain choice and confidence in voting methods.
- 4 The full benefits of RVEM can only be realised in a multi-channel environment if traditional voting processes also support e-voting and e-counting. One way of achieving this would be through the development of electronic machine voting in polling stations, linked to a central electronic register for each constituency or local authority. In order for tangible benefits to be demonstrated to voters, it is important that citizens are enabled to vote in any polling station within their constituency or local authority, as a first step towards complete flexibility of voting.
- 5 A further interim step towards RVEM should be the implementation of e-voting within polling stations that enables citizens to vote from any polling station across the country rather than just their designated one. Central to this process will be the implementation of the Local Authorities' Secure Electoral Register (LASER), and the ability to have a system in place that will enable e-voting to connect to the relevant electoral register, verify voter details and record who has voted in real time. Implementation of e-voting based upon the principle of voting from any polling station would bring enormous benefits to the voter in terms of flexibility. It would also provide an opportunity for voter education, building capacity among voters on how to use electronic systems in voting.
- 6 The principle of decentralisation of elections offers significant security benefits as well as operational flexibility to e-voting. While some centralised systems may be necessary, such as connections to the electoral register, localised knowledge and support should continue to lie at the heart of elections. This is particularly important during the pilot and implementation stages, where local knowledge and

experience may help to address potential problems. However, it is also likely to be valuable for the foreseeable future.

- 7 If the RVEM methods are actively developed, then government policies need to support wide access to the relevant technologies. This might involve ensuring the wide availability of interactive capacity among new digital TV users (some new DTV sets will not have this capacity) and further attempts to bridge the digital divide in internet use.
- 8 The implementation strategy needs to include a significant component of public education. In part, this education process should seek to explain the different options open for voting in any given election. At the same time, however, it also needs to manage public expectations in order to emphasise the benefits to voters that emerge from each technology.
- 9 Risk analysis of potential systems should not only concentrate upon the technical features of the system but should also address issues of public satisfaction and confidence. Citizens may become disenchanted with e-voting if they have problems in using the system, thereby adding to public apathy or indifference to elections. More importantly, however, every effort must be made to maintain public confidence in the integrity of the electoral system. The public should be left in no doubt that e-voting is secure and free from abuse by third parties.
- 10 Specifically, any system that supports e-voting should have open source code that can be verified by candidates or their agents and which has met the approval of an independent national body such as the Electoral Commission. In this way, public

confidence can be maintained in the integrity of the ballot.

- 11 The government may wish to take the opportunity that e-voting implementation affords to undertake a fundamental review of electoral law in order to make it compatible with 21st century practices as well as technological capabilities.

Understanding the context - principal research findings

Lessons from earlier experiments

There have been a number of experiments with e-voting in both the UK and overseas but the lessons that can be drawn from these are limited because there have been no large scale public elections using Remote Voting by Electronic Means (RVEM). Large scale e-voting in the Netherlands, Belgium and Brazil has all been based in supervised locations. Only the Arizona Democratic Primary of 2000 allowed voting by internet. Consequently, the UK will be in the vanguard of e-voting if it moves swiftly to RVEM.

Increasing turnout

The commonly held assumption that e-voting will appeal to younger voters and will substantially boost turnout among certain groups of the population is not supported by the research. While a small proportion of voters are inconvenienced by current voting methods and thereby prevented from voting, the majority of non-voters, and especially young people, cite other reasons for not voting. In particular, young people demonstrate far less sense of civic duty to vote than older people. Among internet users, younger people are consistently less likely to vote electronically than older people and those from lower socio-economic groups are also less likely to vote via the internet -

despite their access. E-voting on its own is unlikely to stimulate greater levels of democratic engagement.

Popular support for e-voting

Analysis of survey data shows that there is popular support for e-voting and that this support is growing. When asked about which government services they would want to use electronically, 29 per cent of respondents to KPMG's 2001 e-government survey stated e-voting. Support is even higher among current internet users, with 66 per cent of such respondents in a BMRB panel survey being willing to use the internet to vote - 28 per cent more than would use it play the National Lottery. Those who use the internet for other interactive transactions, such as shopping and banking are among the most likely to support internet voting. Support, however, is not the same as demand for e-voting. The research does not reveal a current strong demand for e-voting among the public.

Public attitudes towards e-voting

Focus group research revealed that the majority of participants felt e-voting would be a good idea, while a small core of voters would be resistant to e-voting, as well as many non-voters. Even though many participants would not use e-voting methods themselves, there was widespread support for making it available for others. Participants showed a marked preference for certain technologies:

- telephone, internet and interactive digital television (iDTV) were all considered good options among those who had access to these facilities;
- public terminals such as the National Lottery terminals and bank ATMs were not considered desirable because they were not sufficiently

private and were not widely enough available in residential and rural areas; and

- SMS text voting was not supported, even among those who use it elsewhere, because it was felt to trivialise the election process.

Public use of e-voting

Many focus group participants were concerned that once e-voting was implemented, they would be stigmatised if they wanted to use conventional polling stations. Tests with participants using PIN numbers demonstrated a limited capacity among many people to accurately key in appropriate authentication methods. These issues will need to be addressed.

Public confidence in e-voting

Many individuals expressed concerns over the security and privacy of e-voting and felt that substantial reassurance would need to be offered by the government prior to implementation. Establishing and maintaining public confidence in the security and privacy of the electoral system appears to be fundamental in achieving legitimacy for e-voting.

Secrecy

The legal research highlights a number of international declarations and protocols, to which the United Kingdom is signatory or to which it is at least normatively bound, that require voting to take place in secret. These declarations and protocols call into doubt whether any form of remote voting, by electronic or other means, would be legal in an international context. In particular, there is a question over whether the state has a duty to ensure the secrecy of the ballot or, more simply, the duty to provide the means by which a secret ballot can be cast by those who want one. Until this position is clarified, the issue of secrecy and the UK's obligations under international protocols remains a significant

barrier to the implementation of RVEM. However, it is also worth noting that postal voting has the potential to compromise secrecy in the same way but has not been subject to any challenge.

To resolve this problem the government will need to seek appropriate legal advice on the relevance of the identified legislation to the implementation of e-voting and, possibly, a definitive legal judgment on the issue. There may also be an opportunity for government to propose amendments to international law that accommodates RVEM without compromising the fundamental principles that provide for free and fair elections in democracies. It is also recommended that further research be undertaken into the extent to which there is a substantive risk of voter secrecy being compromised by the implementation of RVEM. A broader public debate on the issue should also be encouraged to contribute to policy-making on this issue.

Security

The research into technological options has highlighted the security limitations of current technologies. In particular, the research has highlighted the vulnerability of various technologies to:

- denial of service attacks that may prevent some or all voters from casting their ballot;
- viruses that may prevent voting from taking place or may corrupt the vote once has been cast;
- hacking that may affect the privacy of voting or alter votes that have been cast;
- confidence attacks that may undermine public confidence that the election has been free and fair;

- physical disruption of power supplies and systems, either through inadvertent failure or deliberate disruption (for example, all electronic systems are dependent upon key organisations and workers to operate systems during an election period); and
- the limits to system capacity to cope with peak demand during voting periods.

Technological solutions to these issues can be found and, indeed, are already in hand. Creating and maintaining public confidence in the integrity of the voting process should lie at the heart of these solutions.

Technological penetration and voter capacity

When coupled with the focus group work the analysis of penetration raises some significant problems with any technology that would form the basis of RVEM. Only the telephone has near universal access and other technologies are unevenly distributed throughout the population. This means that certain groups (primarily the more affluent ones) will be unfairly advantaged by an implementation of RVEM based upon technologies such as the internet, although this may be offset to a degree by maintaining multiple channels for voting.

This issue is not only a problem in terms of access, it is also a problem in terms of voter capacity to use the technology to vote. Experience and willingness to use the technology is intrinsically linked. Citizens with limited experience of using the technology interactively will find voting difficult and will be easily put off from voting by such means. There needs to be widespread public use of any technology, prior to its adoption as the basis of RVEM. It is necessary, therefore, not only to seek implementation options based upon widely available technologies but also to find opportunities for the electorate to

experience use of these technologies in interactive environments.

Costs and benefits

The costs and benefits of RVEM are difficult to quantify, although some assessment can be made.

Benefits

Some of the benefits are fairly obvious. Providing multi-channel access to voting will make it much more convenient and accessible for many people than the current system. Modernisation of the electoral process will also provide the opportunity to make voting practices more robust and flexible, reducing still further the opportunities for electoral fraud while, at the same time, improving the ease with which elections can be implemented. Consequently, the electoral process might be more easily modified in the future or used for alternative activities such as referendums. In addition, elections in which a large proportion of the votes are cast electronically will reduce the costs of vote counting and may provide opportunities for other parts of the electoral process to be automated. Consequently, in the longer term there may be significant efficiency gains to be made from e-voting.

Costs

The costs of an e-enabled election depend upon the range of channels offered and the ways in which each of the relevant technologies is implemented. Information from the 2002 e-voting pilots suggests that the set-up costs for e-voting can be significant and are unlikely to be matched by efficiency savings in the short-term. However, once the investment has been made in appropriate infrastructures then it seems likely that greater savings can be made in the long term.

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